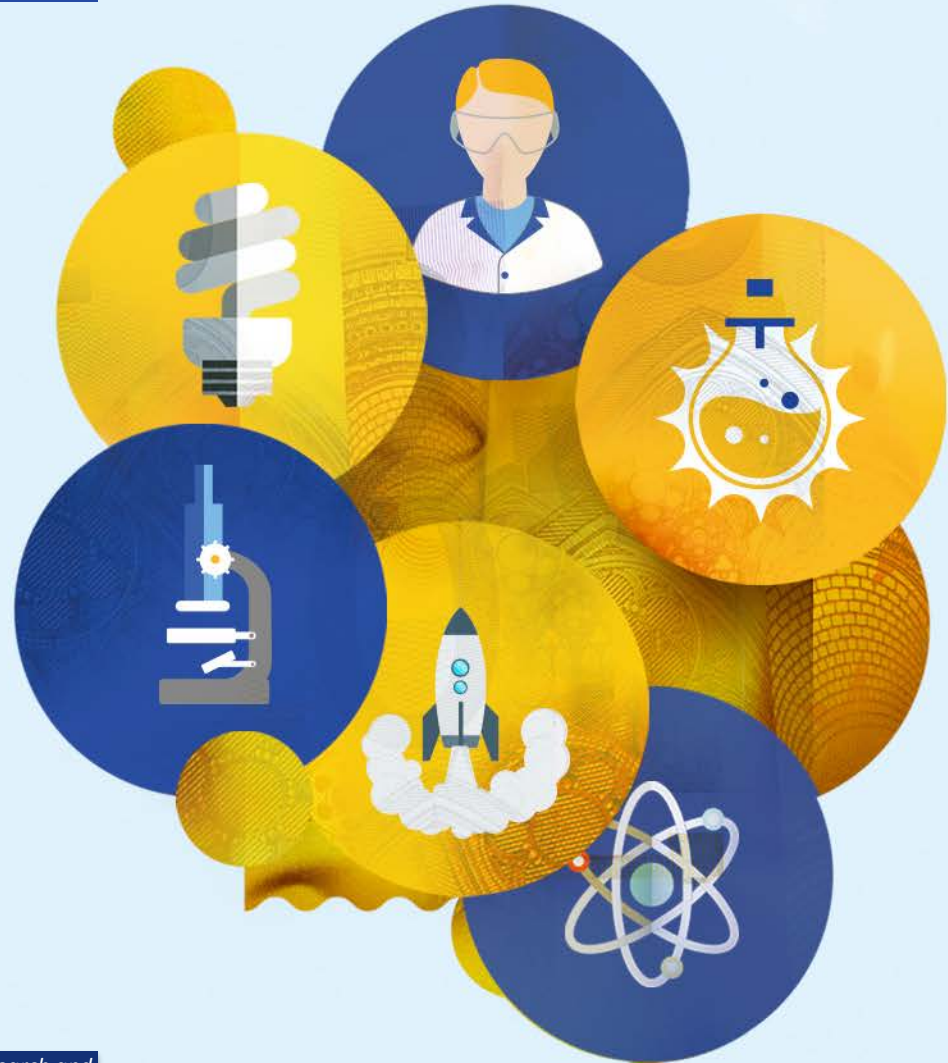


# Commission proposal for **Horizon Europe**

THE NEXT EU RESEARCH & INNOVATION  
PROGRAMME (2021 – 2027)

**#HorizonEU**

Feilim O'Connor - DG ENER, Unit C.2  
ETIP SNET Workshops  
19/09/2018





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**MY VIEW**



# Horizon Europe

is the Commission proposal for a **€100 billion** research and innovation funding programme for seven years (2021-2027)



**to strengthen the EU's scientific and technological bases**



**to boost Europe's innovation capacity, competitiveness and jobs**

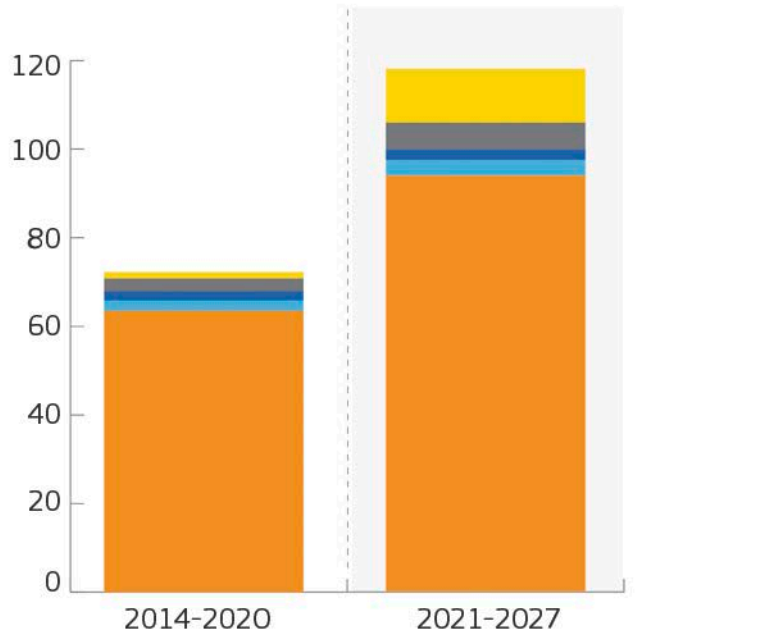


**to deliver on citizens' priorities and sustain our socio-economic model and values**

**€4.1 billion** are proposed to be allocated for defence research, in a separate proposal for a European Defence Fund

# The next long-term EU budget:

## Investing in the future

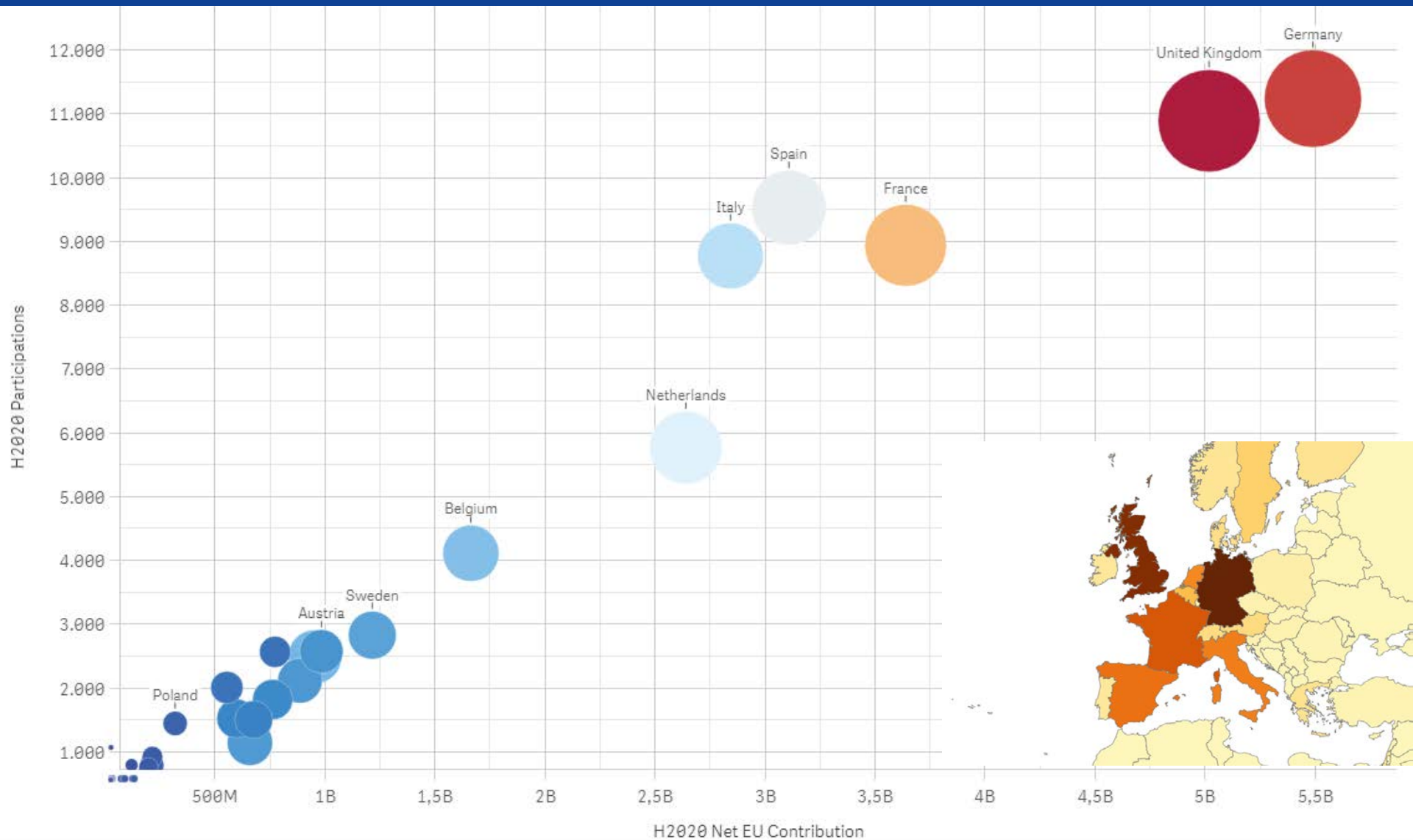


Building on the success of the EU's past flagship research and innovation programmes, the Commission proposes to **increase investment in research-innovation and digital** by allocating **€114.2 billion** for the future Multiannual Financial Framework.

- Digital Europe Programme & Connecting Europe Facility - Digital
- International Thermonuclear Experimental Reactor (ITER)
- Euratom Research and Training Programme
- Innovation Window InvestEU Fund
- Horizon Europe

Source: European Commission  
Note: Compared to the Multiannual Financial Framework 2014-2020 at EU-27 (estimate)

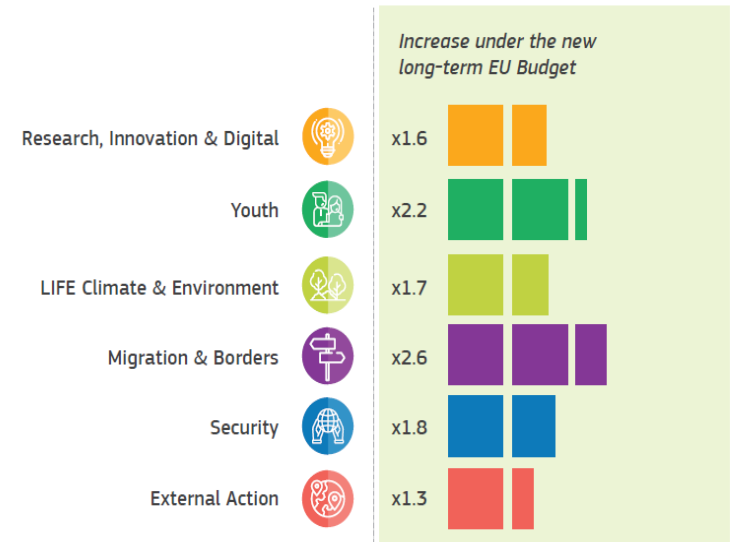
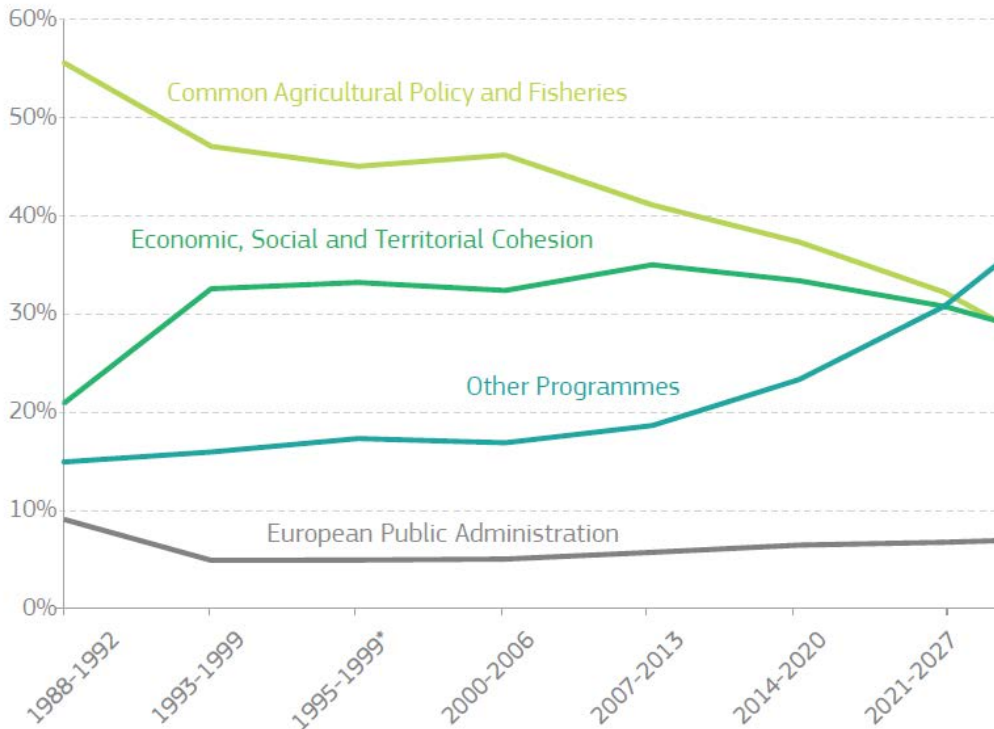
# Participation & Net EU Contribution



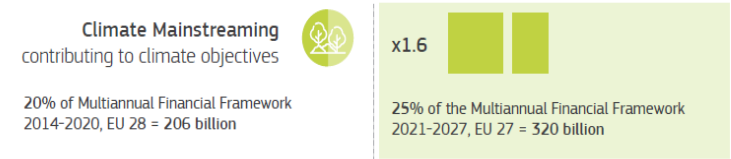
Size and colour: Leading, Coordinating role of a country - EU Contribution (EURO)

# The next long-term EU budget:

## Evolution of main policy areas in the EU



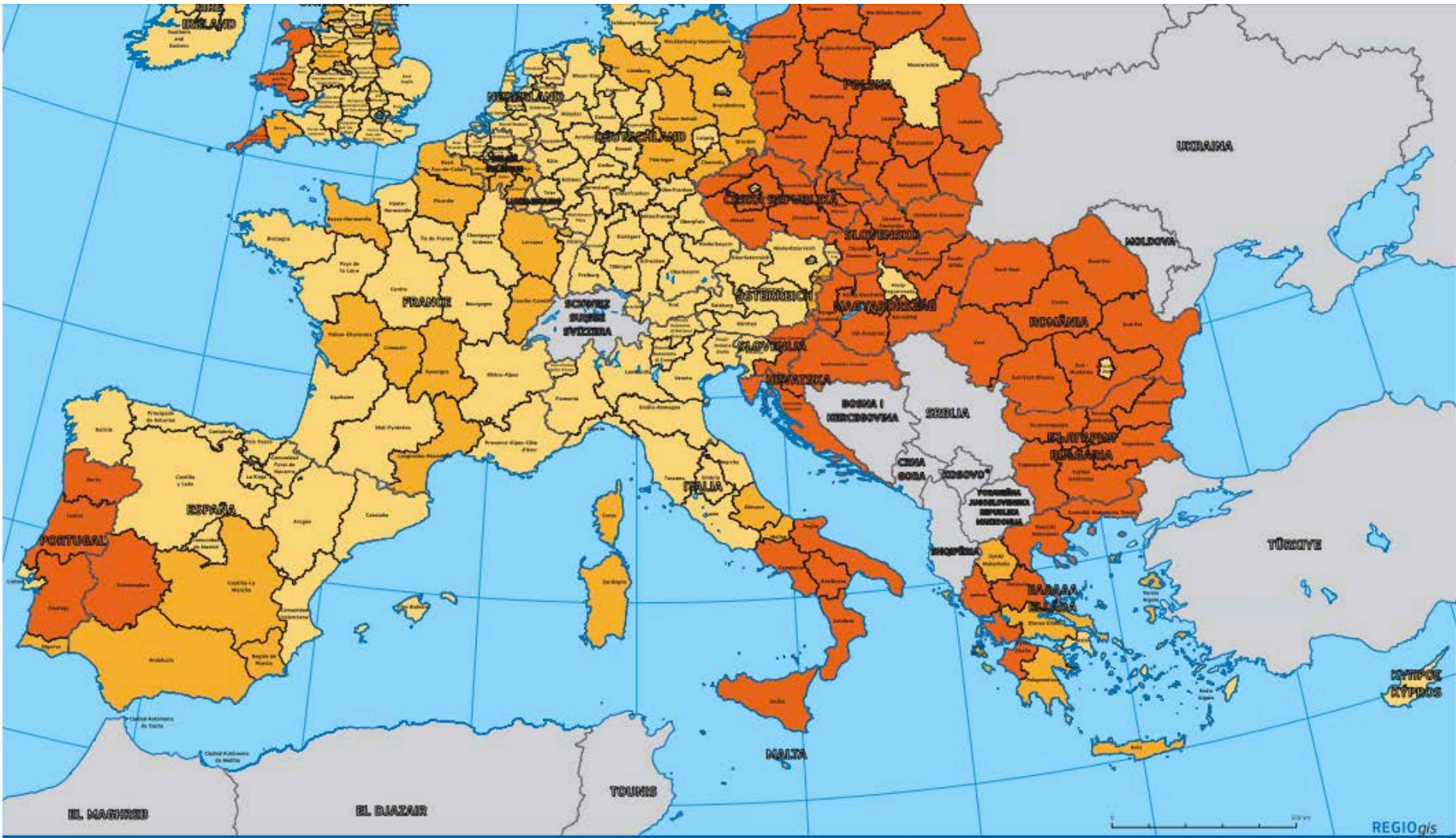
**Combined increase = + €109 billion**



**Combined increase = + €114 billion**

Source: European Commission





## Structural Funds (ERDF and ESF) eligibility 2014-2020

### Category

- Less developed regions (GDP/head < 75% of EU-27 average)
- Transition regions (GDP/head between 75% and 90% of EU-27 average)
- More developed regions (GDP/head >= 90% of EU-27 average)



# Horizon Europe – Why?



# Horizon Europe: investing in R&I to shape our future

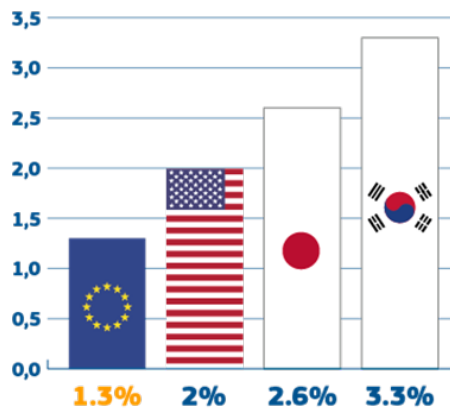
- The vision:
  - " a Europe that protects,  
a Europe that empowers,  
a Europe that defends"  
*Jean-Claude Juncker*
- Tackling **climate change**  
(35 % budgetary target)
- Helping to achieve **Sustainable Development Goals**
- Boosting the Union's  
**competitiveness and growth**



# While benefiting from world-class research and strong industries...

Our knowledge and skills are our main resources.

- 7% of the world's population
- 20% of global R&D
- 1/3 of all high-quality scientific publications

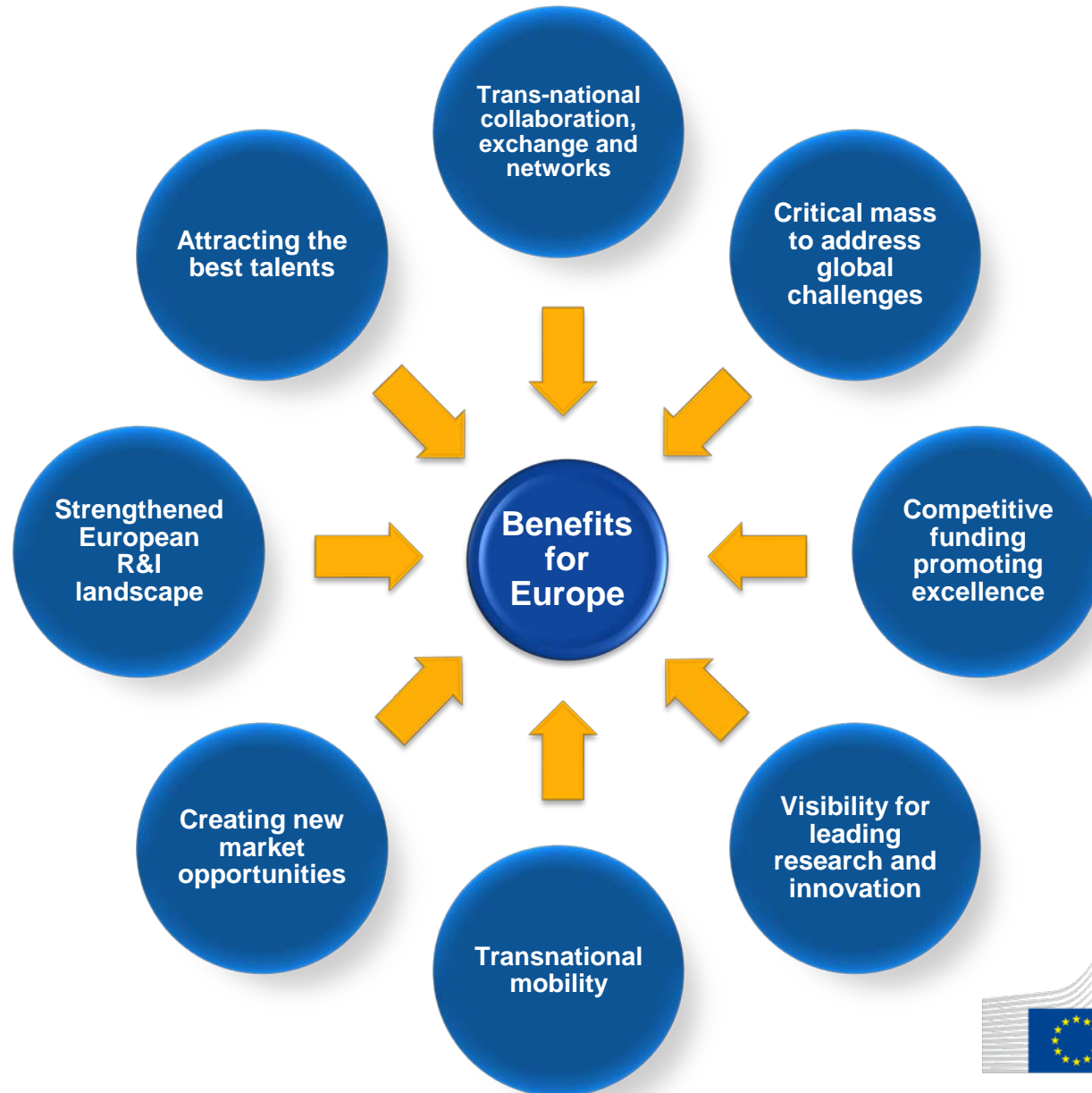


1.3%  
EU business  
R&D investment

**...Europe fails to transform leadership in science into leadership in innovation and entrepreneurship**



# Added value through Horizon Europe:

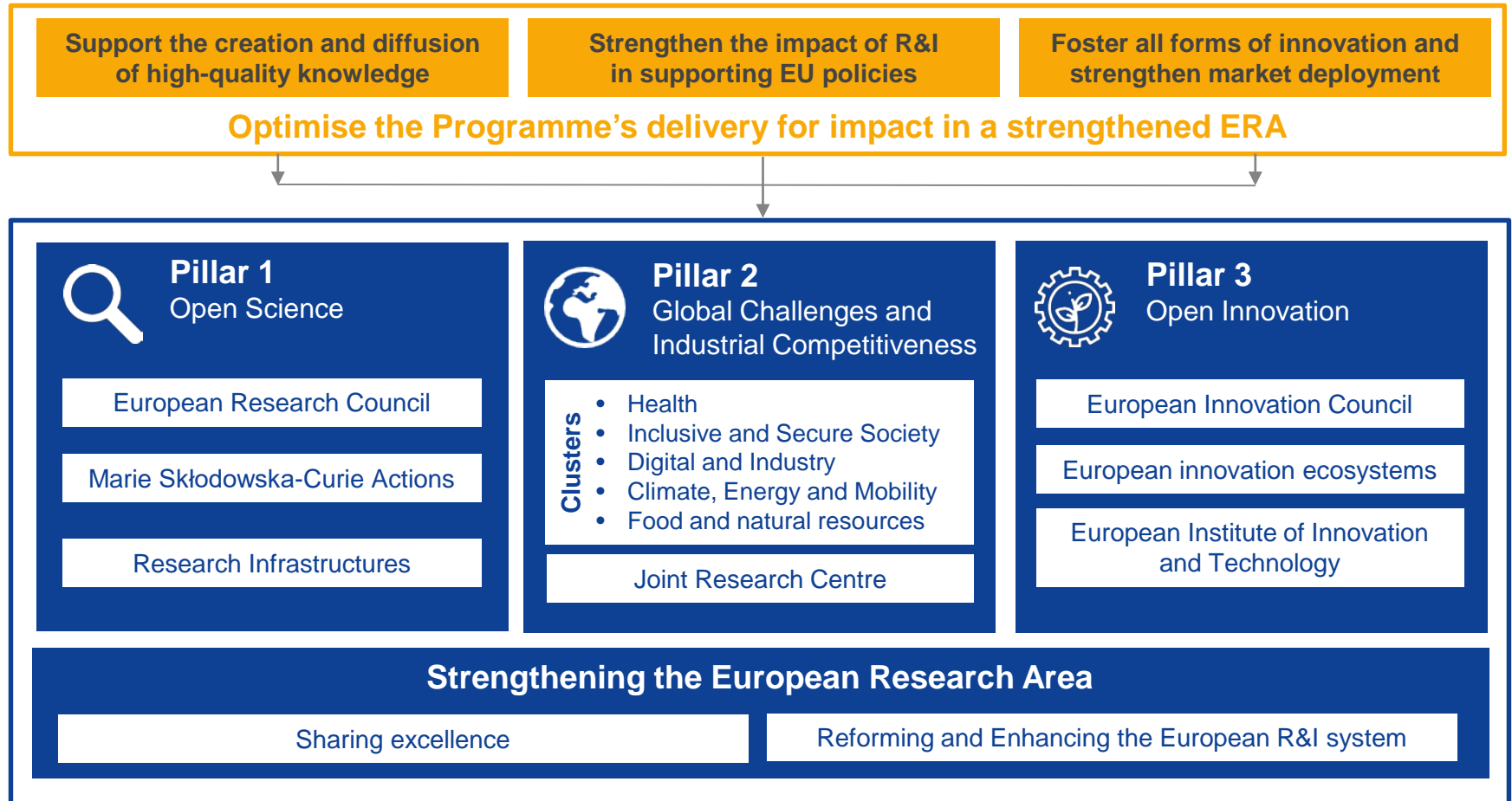


# Horizon Europe – What?

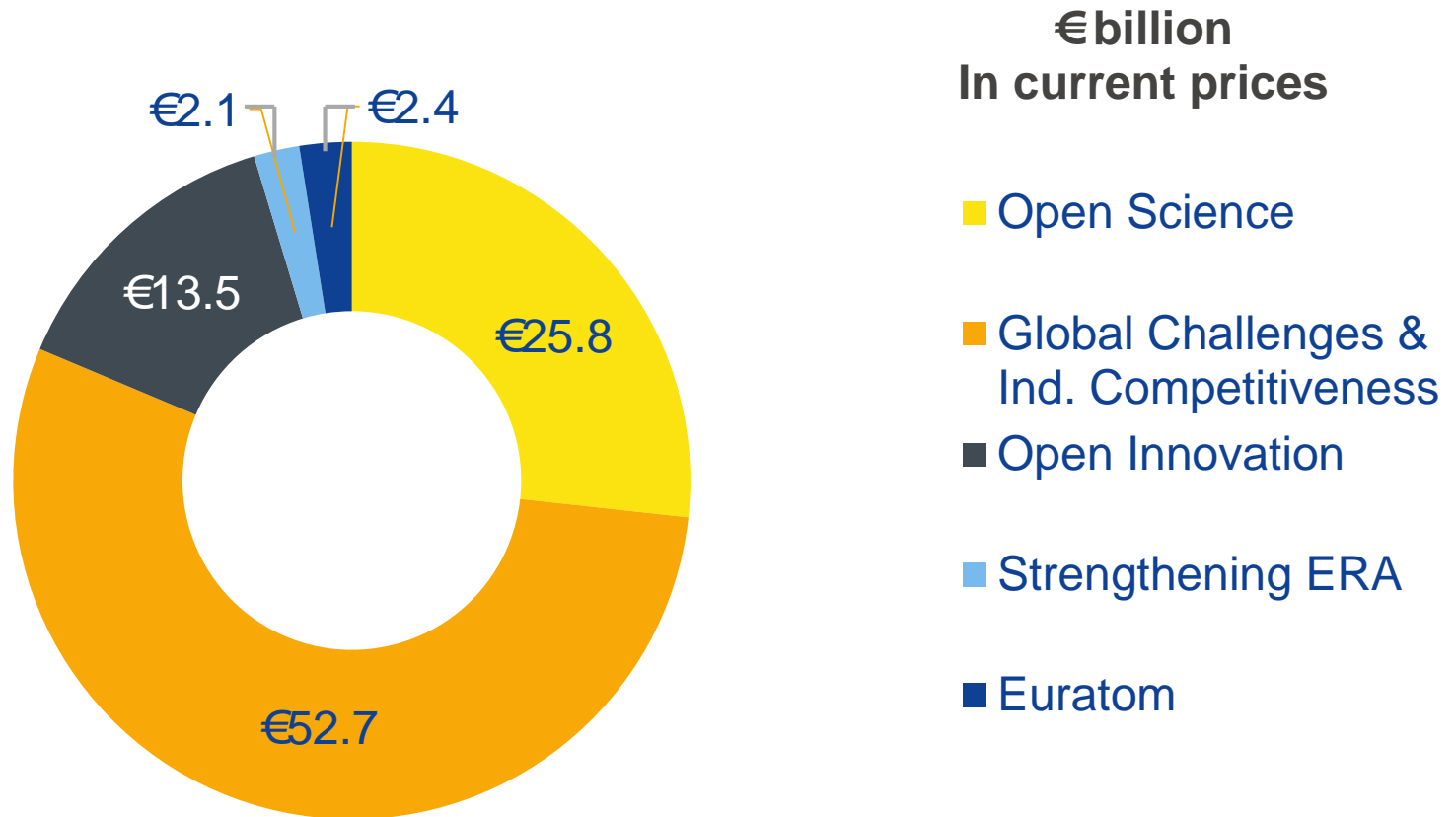


# Horizon Europe: evolution not revolution

## Specific objectives of the Programme



# Budget: €100 billion\*



\* This envelope includes EUR 3.5 billion allocated under the InvestEU Fund.



## Pillar 2

# Global Challenges & Industrial Competitiveness:

boosting key technologies and solutions underpinning EU policies & Sustainable Development Goals

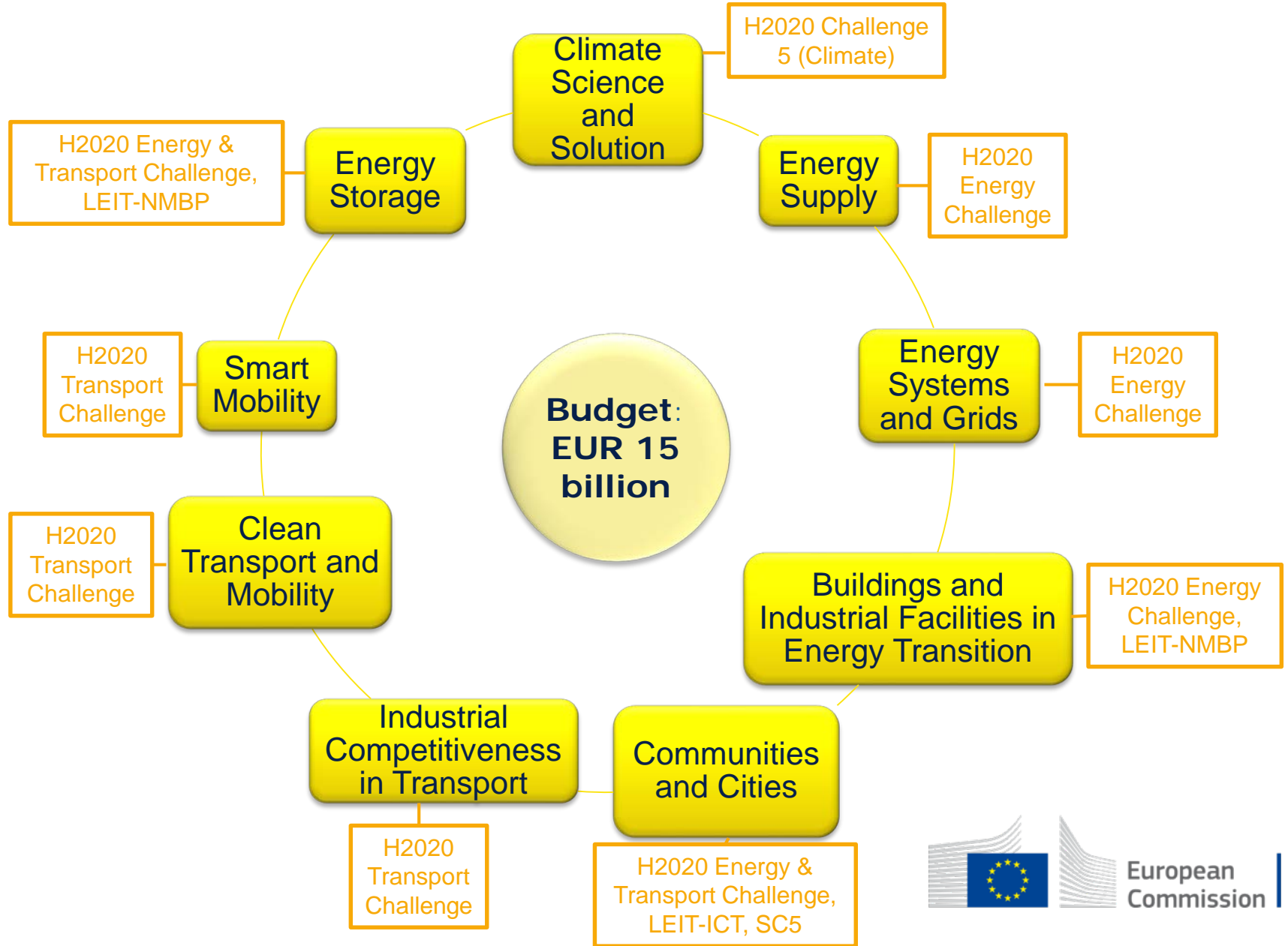
| <b>Clusters</b><br>implemented through usual calls, <b>missions &amp; partnerships</b>  | Budget<br>(€ billion) |
|---|-----------------------|
| Health  | € 7.7                 |
| Inclusive and Secure Societies  | € 2.8                 |
| Digital and Industry  | € 15                  |
| Climate, Energy and Mobility  | € 15                  |
| Food and Natural Resources  | € 10                  |
| <b>Joint Research Centre</b><br>supports European policies with independent scientific evidence & technical support throughout the policy cycle | € 2.2                 |

# Clusters in 'Global Challenges and Industrial Competitiveness'

| Clusters                              | Areas of intervention  |  |
|---------------------------------------|--|--|
| <b>Health</b>                         | <ul style="list-style-type: none"> <li>* Health throughout the life course</li> <li>* Non-communicable and rare diseases</li> <li>* Tools, technologies and digital solutions for health and care</li> </ul>                         | <ul style="list-style-type: none"> <li>* Environmental and social health determinants</li> <li>* Infectious diseases</li> <li>* Health care systems</li> </ul>   |
| <b>Inclusive and Secure Societies</b> | <ul style="list-style-type: none"> <li>* Democracy</li> <li>* Social and economic transformations</li> <li>* Protection and Security</li> </ul>  | <ul style="list-style-type: none"> <li>* Cultural heritage</li> <li>* Disaster-resilient societies</li> <li>* Cybersecurity</li> </ul>   |
| <b>Digital and Industry</b>           | <ul style="list-style-type: none"> <li>* Manufacturing technologies</li> <li>* Advanced materials</li> <li>* Next generation internet</li> <li>* Circular industries</li> <li>* Space</li> </ul>                                     | <ul style="list-style-type: none"> <li>* Key digital technologies</li> <li>* Artificial intelligence and robotics</li> <li>* Advanced computing and Big Data</li> <li>* Low carbon and clean industry</li> </ul> |
| <b>Climate, Energy and Mobility</b>   | <ul style="list-style-type: none"> <li>* Climate science and solutions</li> <li>* Energy systems and grids</li> <li>* Communities and cities</li> <li>* Industrial competitiveness in transport</li> <li>* Smart mobility</li> </ul> | <ul style="list-style-type: none"> <li>* Energy supply</li> <li>* Buildings and industrial facilities in energy transition</li> <li>* Clean transport and mobility</li> <li>* Energy storage</li> </ul>          |
| <b>Food and Natural Resources</b>     | <ul style="list-style-type: none"> <li>* Environmental observation</li> <li>* Agriculture, forestry and rural areas</li> <li>* Food systems</li> <li>* Circular systems</li> </ul>   | <ul style="list-style-type: none"> <li>* Biodiversity and natural capital</li> <li>* Sea and oceans</li> <li>* Bio-based innovation systems</li> </ul>   |



# Cluster 'Climate, Energy and Mobility' - Scope



# Horizon Europe – What's new?

# Lessons Learned

## from Horizon 2020 Interim Evaluation



Support breakthrough innovation



Create more impact through mission-orientation and citizens' involvement



Strengthen international cooperation



Reinforce openness



Rationalise the funding landscape



# Key Novelties

## in Horizon Europe

European Innovation Council

R&I Missions

Extended association possibilities

Open science policy

New approach to Partnerships





# European Innovation Council

The EIC will support innovations with breakthrough and disruptive nature and scale up potential that are too risky for private investors.

**European  
Innovation  
Council**

**Helping innovators create markets of the future,  
leverage private finance, scale up their  
companies,  
Innovation centric, risk taking & agile, pro-  
active management and follow up**

Two complementary instruments bridging the gap from idea to investable project

**Pathfinder: grants**  
(from early technology  
to pre- commercial)

**Accelerator:**  
**grants & blended finance**  
(from pre-commercial  
to market & scale-up)



# R&I Missions

## R&I Missions

**Connecting to citizens:** Missions will relate EU's research and innovation to society and citizens' needs, with strong visibility and impact

A mission will consist of a portfolio of actions intended to achieve **a bold and inspirational as well as measurable goal** within a set timeframe, with impact for science and technology, society and citizens that goes beyond individual actions

Horizon Europe proposal defines mission characteristics and criteria

Specific missions will be **co-designed with Member States, stakeholders and citizens** and programmed within the Global Challenges and Industrial Competitiveness pillar (drawing on inputs from other pillars)

# Horizon Europe – How?



# Synergies with other Union programmes

Horizon Europe



## Enhanced synergies

### Compatibility

Harmonisation of funding rules;  
flexible co-funding schemes;  
pooling resources at EU level

### Coherence and complementarity

Alignment of strategic priorities in  
support of a common vision

### Other Union Programmes, including

Common Agricultural Policy  
ERDF  
External Instrument  
Maritime & Fisheries Fund  
InvestEU  
ERDF  
Connecting Europe Facility  
Space Programme  
LIFE  
ESF+  
Digital Europe  
Single Market Programme  
Erasmus  
Innovation Fund  
Internal Security Fund

# Strategic planning

to define multiannual work programmes and calls for proposals

- Transparency and stakeholder involvement
- Prioritisation and flexibility to align to political priorities
- Internal programme coherence & synergies with other programmes

## Multiannual Strategic R&I Plan

- \* Multiannual orientations and priorities in one document
- \* Areas for partnerships and missions

Strategic discussions with Member States and European Parliament

Consultation with stakeholders

**Work Programmes**

# Horizon 2020 – What now?

# SC - Secure, clean and efficient energy systems

## Energy Efficiency



Heating & Cooling



Consumers



Buildings



Industry & Products



Finance for Sustainable Energy

## Global Leadership in renewables



## Smart and Clean Energy for Consumers



## Smart Cities and Communities



## Smart Citizen Centered Energy system

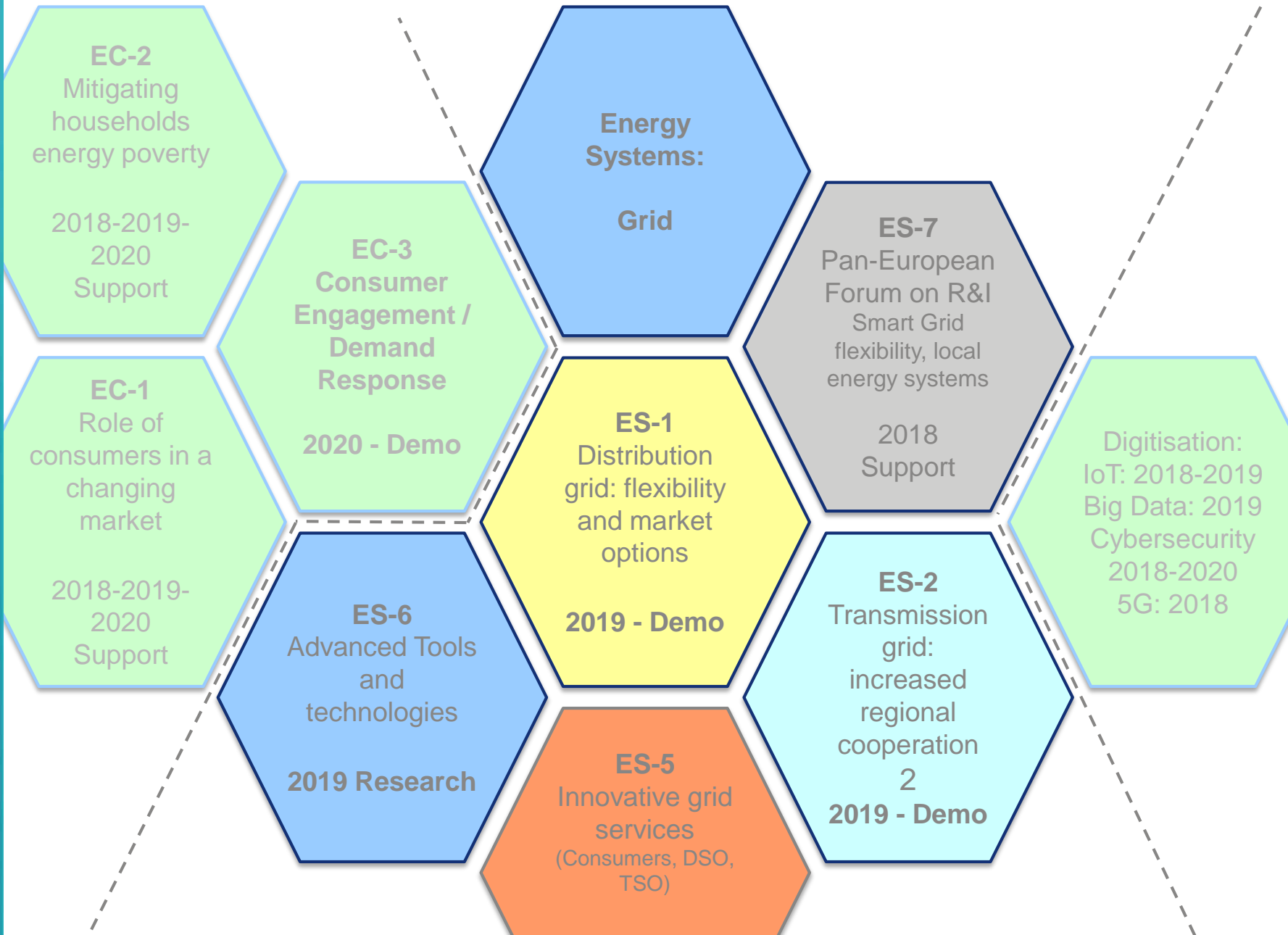


## Near-zero CO2 emission from fossil fuel / carbon intensive industries





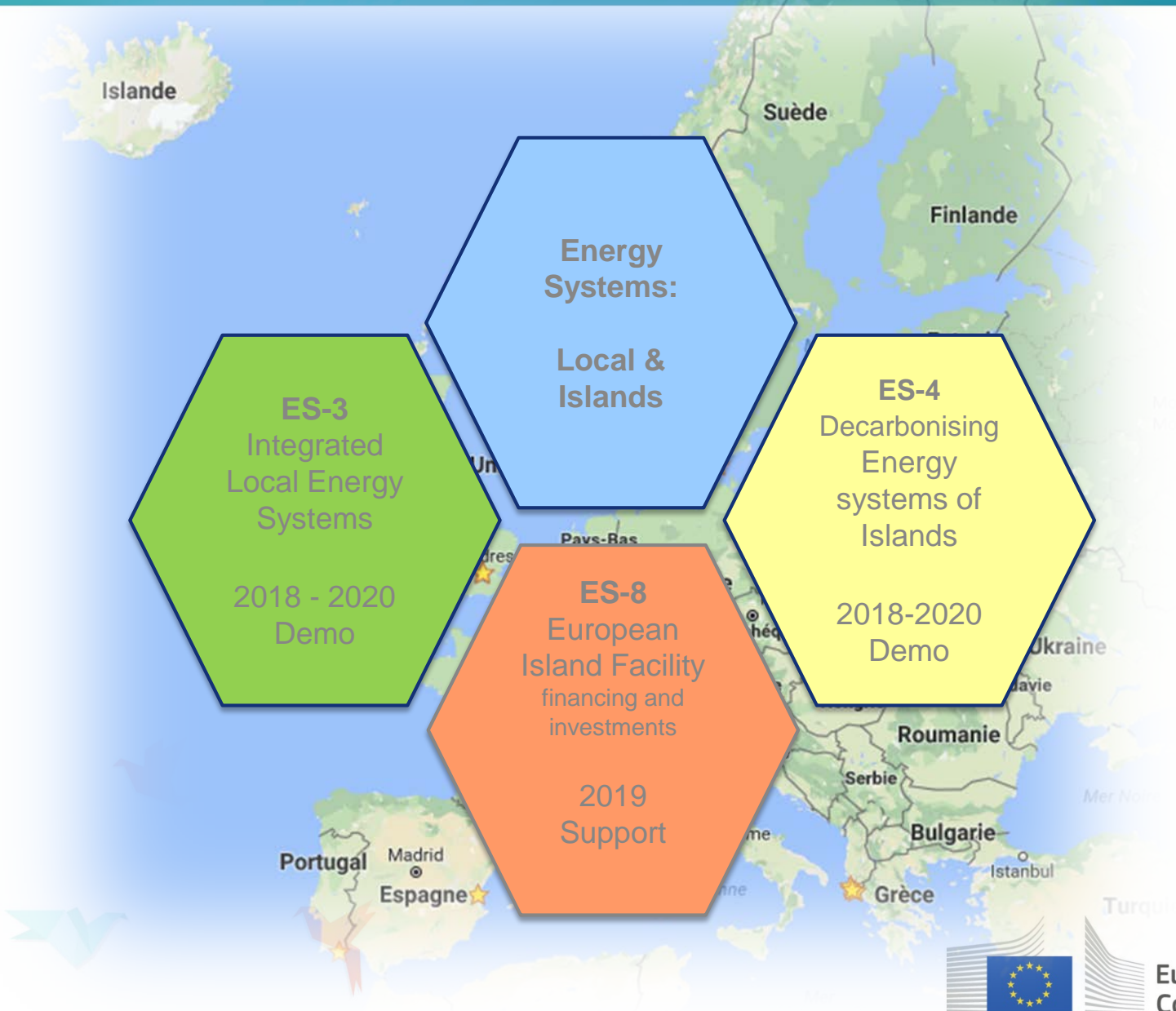
Smart and Clean Energy for Consumers



Smart Citizen Centered

Energy System

# Smart Citizen Centered Energy System: Local and Islands



# Overview of Topics

|         |  | Instrument | TRL    | Ec. fund<br>per Proj. | 2018<br>MEur | 2019<br>MEur | 2020<br>Meur |
|---------|--|------------|--------|-----------------------|--------------|--------------|--------------|
| EC-3    | Consumer Engagement                          | IA         | 5 to 8 | 5-7                   |              |              | 18           |
| ES-5    | Innovative Grid services (TSO-DSO-Consumers) | IA         | 5 to 8 | 13-17                 | 30           |              | 30           |
| ES-3    | Integrated local energy systems              | IA         | 5 to 8 | 5-6                   | 26.3         |              | 30           |
| ES-4    | Decarbonising energy systems of islands      | IA         | 5 to 8 | 7-10                  | 19           |              | 50           |
| SCC-1   | Smart Cities and Communities                 | RIA        |        | 15-20                 | 40           | 80           | 80           |
| SU-DS04 | Cybersecurity                                | IA         | 7      | 6 - 8                 | 5            |              | 15           |





# Thank you

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